WEEDS THAT AFFECT HUMAN HEALTH -- ES-EP-1

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INTRODUCTION

Weeds have affected the lives of humans since the dawn of time. Weeds reduce the yields of crops, provide breeding places for insects and plant diseases, clog waterways, foul recreational waters, and mar the beauty of the land.

Weeds also affect human health by producing allergenic reactions, skin irritations, mechanical injury, and internal poisoning. People need to be able to recognize and avoid such species of weeds, and they need to be familiar with the type of injury these plants cause so they can seek prompt and effective treatment.

Weeds are defined as plants that grow where they are not wanted or that have objectionable qualities. Some plants, such as ragweeds and cockleburs, are always considered weeds. Other plants that sometimes adversely affect human health are beautiful natives of woodland and meadow or showy ornamentals which, if recognized and enjoyed with proper deference to their poisonous or other objectionable characteristics, are not considered weeds. It all depends on whether a plant affects a person's health. Millions of hay fever sufferers count many trees, shrubs, and grasses as weeds, but people unaffected by them do not.

The plants listed here are all weeds in the sense that they are known to affect human health adversely.

Allergenic plants include many species that produce pollen or other windblown foreign bodies that produce allergenic reactions. Many people are not allergic to these species. Millions more are periodically miserable, depending on the season and the particular windblown material that affects them. The ragweeds ("Ambrosia" spp.) are probably the most familiar allergenic plants.

Poison ivy ("Rhus radicans") and stinging nettle ("Urtica" spp.) are among the weeds that cause skin irritations or dermatitis. Physical contact with the plant is usually required for injury. But the toxic substances from poison ivy can be spread by pollen, by contact with ash particles from burning plants, or from contact with animals or garden tools contaminated with the toxic substances.

Weeds such as sandbur ("Cenchrus longispinus"), puncturevine ("Tribulus terrestris"), and various cacti can cause painful mechanical injury. Apart from the pain associated with punctured or scratched skin, the individual may develop an infection if the wound is not properly treated. Most species that rely on thorns or spines for protection are large enough to be seen and avoided. Sandbur, puncturevine, and pricklypear cacti are more difficult to see because they grow low and may be camouflaged by other species.

Weeds that are poisonous when eaten are the most dangerous. More than 700 plants are known to cause illness in humans. Some plants are completely poisonous; in others, only certain parts--leaves, seeds, fruits, or roots--may be poisonous. Individual plants may have both edible and poisonous parts, such as the stalks (edible) and leaves (poisonous) of rhubarb.

Small children should be carefully supervised to prevent ingestion of any plant material except food. The National Poison Center Network lists poisonous plants as the second most frequently ingested toxic substance by children under 5 years of age. Children under 1 year of age account for more than 50 percent of all accidental plant ingestions. Older children and adults should be taught to recognize and avoid poisonous plants. Always remember: never eat or put any plant part in your mouth unless you are absolutely certain it is safe.

FIRST AID FOR PERSONS POISONED OR INJURED BY PLANTS

1. Always have the telephone number of your physician, nearest poison control center, hospital, and rescue unit by your phone. Carry this information with you in a purse or billfold.
2. If someone has eaten a plant suspected of being poisonous, call a physician immediately and describe the plant, the part eaten and how much of the plant the person eats. If possible, collect a sample of the plant, including leaves, flowers, and seeds. Identifying the plant is important in prescribing correct treatment.
3. If no physician is available, give immediate first aid and transport the victim to the nearest hospital.
4. If someone has swallowed a plant, remove it from the person's stomach as quickly as possible by inducing vomiting. "Caution": Do not induce vomiting in a person who is convulsing or unconscious. In children a year old or older, induce vomiting with 1 teaspoon of syrup of ipecac in one or more cups of water. Vomiting also can be induced by tickling the back of the throat with a finger or other blunt object.
5. Above all, transport the victim immediately to the nearest medical facility.
6. If the injury is dermatitis, wash the affected areas with large amounts of water and soap. Also wash the person's clothing thoroughly to remove the toxic substance.
7. Thoroughly clean and disinfect wounds from mechanical injuries. Cover the wound with a sterile bandage.

WAYS TO AVOID POISONING OR INJURY FROM PLANTS

1. Learn to recognize poisonous weeds in your area.
2. Keep plants, seeds, berries, and bulbs away from infants and small children.
3. Watch for plants a child uses in play. Some plants are poisonous if used as blow guns or pea shooters. Adults should avoid using plants to skewer food.
4. Teach small children never to eat plants or to put plant parts in their mouths. (Adults should follow the same advice unless they can positively identify the plants.)
5. Be especially vigilant with home and garden plants that may be poisonous. Keep dangerous potted plants out of the reach of small children and plant poisonous species in inaccessible areas of the flower garden.
6. Wear protective clothing when walking in areas infested with plants that cause dermatitis or mechanical injury.

WEEDS THAT ARE ALLERGENIC

Hay fever, correctly termed "allergic rhinitis" and also referred to as "pollinosis", is the most common allergenic disease in the United States. It affects approximately 10 percent of the population and causes debilitating symptoms such as congestion of the eyes, attacks of sneezing, and plugged ears, often with loss of hearing. Complications such as nasal polyps, or infections of the ears, nose, throat, or sinuses are common. Serious complications such as asthma, permanent bronchial troubles, and damage to the lungs and heart also occur. Hay fever is caused by an allergenic reaction of the mucous membranes with a specific weed pollen. There are more than four dozen weed species that produce allergenic pollens (table 1). Common ragweed, however, causes more allergy problems than all of the other allergenic plants combined.

Family: Asteraceae

Scientific name: "Ambrosia artemisiifolia" L.

Common name: Common ragweed

Description: Common ragweed is the "most ragged" of the four species of the "Ambrosia" genus, which also includes lanceleaf ragweed ("A". "bidentata" Michx.), giant ragweed ("A". "trifida" L.), and western ragweed ("A". "psilostachya" DC.). Common ragweed (figure 1) has been called other names, including Roman wormwood, hayweed, bitterweed, wild tansy, hayfever weed, blackweed, carrotweed, and stammerwort. Common ragweed is an annual that reproduces by seed and grows to a height of 1 to 4 feet. It is an extremely variable plant and has leaves that are both alternate and opposite, usually hairy below and smooth above. The stems may be smooth or hairy. The leaves are simple, pinnately lobed (they are rarely unlobed), and occasionally bipinnatifid.

Flowers of common ragweed are terminal and mostly dioecious, although they sometimes are monoecious. The staminate flowers are found at the tip of flower clusters; the pistillate flowers are at the base and in the axils of the upper leaves. Common ragweed seeds are woody, urn shaped, spiny with a central protuberance, and yellowishbrown to reddishbrown in color.

Common ragweed seedlings emerge from May through July. Flowering parts are formed from July to September, and seeds mature from August to October. The pollen that is produced and distributed in abundant quantities from early August until frost is the cause of most of the pollinosis (hayfever) in the late summer and fall.

Occurrence: Common ragweed is widespread throughout the United States but is most common in the Eastern and Central (ragweed belt) States. It is a common and troublesome weed in poorly managed pastures, cultivated fields, and gardens. It grows profusely in waste areas, ditch banks, vacant lots, and stubble fields.

Toxicity: Common ragweed is toxic because of the allergenic reaction of plant pollen with the mucous membranes of sensitive individuals.

Symptoms: The fine powdery pollen grains contain toxic proteins that act as antigens in combining with the appropriate antibodies produced by the body to form an antigen-antibody complex. The formation of this complex results in the release of certain so-called allergy mediators, such as histamines, which cause the symptoms. The symptoms characteristically appear as itching, red, watering eyes; attacks of incessant sneezing; and an itching, clogged, or runny nose often accompanied by

sinus headaches, fullness of the ears, and impaired hearing. Persistent symptoms lead to fatigue, depression, lack of sleep, and difficulty in performing tasks and in concerntrating.

Closely related species: "Ambrosia psilostachya" resembles "A". "artemisiifolia" but has a narrower overall leaf structure, is more erect, has creeping roots and rhizomes, and is a perennial instead of an annual.

Table 1. Other Allergy-Producing Weeds

Common name	Scientific name
Amaranth	"Amaranthus" spp.
Annual bluegrass	"Poa annua" L.
Barnyardgrass	"Echinochloa crus-galli" (L.) Beauv.
Bermudagrass	"Cynodon dactylon" (L.) Pers.
Brome	"Bromus" spp.
Buffalograss	"Buchloe dactyloides" (Nutt.) Engelm.
Canarygrass	"Phalaris" spp.
Cheat	"Bromus secalinus" L.
Cocklebur	"Xanthium" spp.
Dallisgrass	"Paspalum dilatatum" Poir.
Dandelion	"Taraxacum" spp.
Dock	"Rumex" spp.
Foxtail	"Setaria" spp.
Goatgrass	"Aegilops" spp.
Hemp	"Cannabis sativa" L.
Johnsongrass	"Sorghum halepense" (L.) Pers.
Kochia	"Kochia scoparia" (L.) Schrad.
Lambsquarters	"Chenopodium" spp.
Marshelder	"Iva xanthifolia" Nutt.
Nettle	"Urtica" spp.
Orchardgrass	"Dactylis glomerata" L.

Pigweed	"Amaranthus" spp.
Plantain	"Plantago" spp.
Quackgrass	"Agropyron repens" (L.) Beauv.
Red sorrel	"Rumex acetosella" L.
Redtop	"Agrostis alba" L.
Russian thistle	"Salsoli kali" L.
Ryegrass	"Lolium multiflorum" Lam.
Sagebrush	"Artemisia" spp.
Saltbrush	"Atriplex" spp.
Saltgrass	"Distichlis spicata" (L.) Greene
Sudangrass	"Sorghum sudanense" (Piper) Stapf
Velvetgrass	"Holcus lanatus" L.
Wormwood	"Artemisia" spp.

WEEDS THAT CAUSE DERMATITIS

Of all the toxic effects from plants, dermatitis probably is encountered most frequently. More than 100 plant species can cause contact dermatitis in people. Direct irritation of skin from primary chemical irritants generally affects nearly everyone. The reaction from irritants occurs shortly after exposure, in contrast to allergic reactions, in which response occurs at least 24 hours after exposure. The chemical irritant may be present on the plant surface or appear only when plants are bruised or crushed. Also, the toxic potential may vary with factors such as the season, stage of plant maturity, weather, soil, and ecotype. The chemical irritants can be present in all parts of plants, from roots to flowers. Some plants, like the spurges, which have a milky sap, are chemically irritating; some, like the nettles, are mechanically and chemically irritating; and some, like poison ivy, cause an allergic contact dermatitis. The most common causes of dermatitis in the United States probably are the nettles ("Urtica" and "Laportea" species) and the poison ivy, poison oak, and poison sumac group ("Rhus" species).

Poison Ivy Group

Nearly 2 million people in the United States suffer annually from direct or indirect contact with posion ivy, poison oak, or poison sumac. One of every two persons is allergic to some degree to these plants. The danger of poisoning is greatest in spring and summer, when sap is abundant, and least in late fall or winter. When plants are collected and burned outdoors, the toxic substance adheres to particles of smoke and can produce skin symptoms when a person stands in the smoke, even when plants are burned in winter.

Family: Anacardiaceae

Scientific name: "Rhus radicans" L.

Common name: Poison ivy

Description: This perennial woody plant is a low, upright shrub 2 to 7 feet tall or a trailing, climbing plant (figure 2). The stem branches of climbing plants have aerial clinging roots. Old stems are covered with dark fibers. The leaves, which consist of three leaflets, are alternate and are on long stalks. The terminal leaflet has a longer stalk than the pair of leaflets on the side; this is the most distinguishing feature in identifying poison ivy. The leaflets may be stiff and leathery but are highly variable in length and characteristics. Leaves may be 4 to 14 inches long, hairless or slightly hairy, and glossy or dull. The leaf margins may be toothless or saw-toothed and variously lobed. Each leaflet has a pointed tip. The flowers, found from May to July, are yellowish green and are produced in clusters (panicles) in the axils of new leaves or in axils from previous years. These

panicles can be curved upward or be drooping. The fruit is a roundish berry that is small, hard, whitish to gray colored and is visible throughout the winter. The outer tissue of the fruit is thin and dry and breaks readily to expose a fibrous interior. Some poison ivy plants produce only female flowers, and produce fruit only if male plants are nearby. Male plants produce no berries. Still other plants produce both male and female flowers on the same plant.

Occurrence: Poison ivy grows in thickets, open woods, sandy or rocky places, and along fence rows. It is abundant from Quebec to the Great Lakes Region south to Texas, and Florida. Poison ivy is also found in the West.

Toxicity: Plants in this family contain dermatitis-producing phenols. The leaves have a linear pattern of vesicles or papules that contain nonvolatile phenolic resins that act as powerful irritants. This substance is present in roots, stems, leaves, pollen, flowers, and fruits.

Symptoms: Contact with leaves can produce scratch marks on the skin, which is different from the symptoms that result from contact with animals or objects (clothing, smoke particles) contaminated with the toxic material. Blisters occur from either direct or indirect contact; however, the blister fluid is not antigenic and does not spread poisoning. The inflammatory skin reaction usually begins a day or more after exposure to poison ivy. If there are no complications, the skin will heal in 1-2 weeks.

Closely related species:

Poison oak ("Rhus toxicodendron" L.) is similar to poison ivy in having three leaflets per leaf, but it is an erect shrub and does not climb. Leaflets are soft and hairy on both surfaces and although they generally are elliptical or more or less diamond-shaped (even egg-shaped), they may be variously lobed, resembling oak leaves. The flowers and fruits are similar to poison ivy in shape, color, and time of appearance. Poison oak does not occur as far north as posion ivy and is most likely to be found in northern Florida to eastern Texas, north to New Jersey, Missouri, and Oklahoma. A western species of poison oak ("Rhus diversiloba" T. & G.) (figure 3), grows from British Columbia to Baja California. The toxic material and the symptoms of poisoning are the same as for poison ivy.

Poison sumac ("Rhus vernix" L.) (figure 4), sometimes called poison elder or poison dogwood, is a coarse shrub or small tree, 6 to 20 feet tall, that has gray, smoothish bark covered or whitened with bloom. The large leaves consist of 7 to 13 pointed leaflets per leaf, each somewhat elliptical in shape. The flower clusters (panicles) are axillary, either spreading or drooping, and are up to 8 inches long. Poison sumac flowers from May to July. The fruits form in August and persist throughout the winter. The fruits are roundish, white- or drab-colored berries. Poison sumac grows in swamps from Florida to east Texas north to Maine and Minnesota. The poisonous principle and the symptoms of poisoning are the same as for poison ivy and poison oak.

Nettle Group

Family: Urticaceae

Scientific name: "Urtica dioica" L.

Common name: Stinging nettle, burning nettle

Description: This perennial herb is an erect, usually unbranched weed that is 2 to 4 feet tall (figure 5). The stems are four-sided, hollow, and contain watery juice. The leaves are opposite, are coarsely but sharply toothed, and are densely covered with coarse stinging hairs. The leaf blades are many times longer than the petiole and can range in shape from the usual heart shape to an elliptical shape. The flowers are small, greenish, and occur in slender, forking clusters (racemes) in the upper axils of paired leaves; they consist of four sepals and four stamens but no petals. Stinging nettle flowers from late June to September and the fruit is an achene.

Occurrence: This plant, naturalized from Eurasia, grows in waste places and roadsides in Canada, from Newfoundland to Manitoba, and south to Virginia and Illinois, and also in the West.

Toxicity: The stinging hairs on leaves carry a toxic agent, which is unknown chemically and is not a histamine, as it was once thought to be.

Symptoms: The stinging hairs act like a hypodermic needle and consist of a fine capillary tube with a bladder-like base that is filled with the chemical irritant. At the tip of the hair is a minute cap that breaks off on contact with the skin. The sharply pointed tip then penetrates the skin and injects the toxic fluid. The result is an intense burning and itching of the skin that persists for minutes to a few hours.

Closely related species: "Urtica gracilis" Ait. resembles "U". "dioica", but the stinging hairs of "U". "gracilis" are sparse. The leaves are narrower and the bases are more rounded and less heart shaped in "U". "gracilis". The geographic range is about the same for both species, but "U". "gracilis" is found more often in damp soil and in thickets. Wood nettle ["Laportea canadensis" (L.) Wedd.], like "Urtica" species, is a perennial, but the leaves are alternate and the leaf bases are rounded or wedge shaped. Wood nettle usually is found on the rich, moist soil in low woods or stream banks from Canada south to Florida, Alabama, Mississippi, and Oklahoma. Wood nettle has stinging hairs and produces the same symptoms as stinging nettle does.

WEEDS THAT ARE POISONOUS WHEN EATEN

Plants that are allergenic or that cause dermatitis or mechanical injury are annoying, but the victim usually recovers. Plants that are poisonous when eaten, however, may cause serious illness or even death.

Since these plants are harmful only if chewed, sucked, or swallowed, poisoning can nearly always be avoided by keeping all plant parts out of the mouth. Some plants, such as white snakeroot and brakenfern, however, contain poisons that can be transferred into milk if cows eat the plant. People who drink such contaminated milk also may become poisoned. Entire plants may be poisonous, or the toxicity may be confined only to roots, vegetative parts, berries, or seeds. Plants may be highly toxic at certain stages of growth and relatively harmless at others. Poison hemlock, oleander, and the seed of rosary pea and castorbean are so poisonous that small amounts may be fatal if eaten. Marijuana and the seed of jimsonweed and other species of "Datura" produce a narcotic effect. The seeds of jimsonweed have caused such severe hallucinations and disorientation in humans that deaths have resulted from secondary causes such as drowning and exposure.

Most cases of internal poisoning are accidental and occur primarily among children who are attracted to brightly colored berries and seeds, or who suck and chew other plant parts. Children and adults alike should be taught never to put any part of a plant in the mouth, much less swallow it, unless than can positively identify the plant and know it to be safe.

Family: Amanitaceae

Scientific name: "Amanita" spp.

Common name: Destroying angels, death cup, fly agaric

Description: There are edible species of "Amanita" in North America, and several of the same species have been popular in Europe for centuries. Dozens of species of "Amanita" in North America are inadequately known. In addition, several of the poisonous species closely resemble the edible ones. Thus, a good mycologist will never recommend collecting or eating any amanitas. It is important to know the features common to all the species. Amanitas emerge from the ground surface as round or oval buttons surrounded by a protective layer known as a universal veil. When the stalk of the button starts to elongate, the soft universal veil fragments and is carried up in the expanding cap as a series of warts or patches of tissue. If the universal veil is tough, it is split by the expanding cap and nothing of the universal veil is left on the cap. Instead, a well-formed volva or cup surrounds the base of the stalk. Furthermore the spores are white. Therefore, mushrooms having white spores, free gills, and a universal veil that leaves a volva or cup should be avoided like a plague.

Occurrence: "Amanita" species live in a variety of habitats from coniferous to mixed forest and rarely in meadows.

Toxicity: Most mushrooms are not poisonous, but a few are deadly. The best advice is to avoid mushrooms unless you can positively identify them as edible. Nearly 90 percent of mushroom poisonings are caused by mushrooms in the genus "Amanita".

Some members of this genus are edible, whereas others are so deadly that one or two bites can be fatal. Among the most poisonous species are "A". "muscaria" (Fr.) S.F. Gray (figure 6), "A". "virosa" (Fr.) Quel., and "A". "phalloides" Fries. These species contain complex poisons such as amatoxins, ibotenic acid, and muscimol. Some of the compounds are hallucinogenic and act on the nervous system.

Family: Apiaceae

Scientific name: "Cicuta douglasii" (DC.) Coult. & Rose

Common name: Western waterhemlock

Description: Waterhemlock is a branching perennial that reaches a height of more than 6 feet (figure 7). The swollen bases of the stems and the usually thick roots have horizontal chambers inside. These chambers exude a gummy and oily yellow juice when cut. The leaves are 5-14 inches long and pinnately divided. The lanceolate leaflets have sharp teeth on the margins. Flowers are small and white in flat-topped clusters. Fruits are small, flat, and round and are decorated with corky roundish ridges.

Occurrence: This member of the carrot family flowers between June and August and is widespread in the Western United States in marshes and wet low places.

Toxicity: Water hemlock contains a poisonous oily, yellow juice called cicutoxin that is found primarily in the fleshy, tuber-like roots (figure 8), with lesser amounts in the parts above ground. The root is very poisonous; one mouthful is sufficient to kill an adult. Children have been poisoned by using the hollow stems for whistles or pea shooters. The plant sometimes is mistaken for wild artichoke or wild parsnip; death results from eating it.

Symptoms: Cicutoxin acts directly on the central nervous system. Symptoms appear within 15 minutes to an hour and include violent convulsions, acute stomach pains, dilated pupils, elevated temperature, diarrhea, delirium, and death.

Related species: "Cicuta maculata" L., also called waterhemlock or spotted cowbane, occurs mainly in the Eastern United States. This species often has a purple-mottled stem base. It is a biennial. The roots resemble small sweet potatoes and they smell like parsnips.

Family: Apiaceae

Scientific name: "Conium maculatum" L.

Common name: Poison hemlock, hemlock

Description: Poison hemlock (figure 9) is a tall biennial herb with a stout taproot and purple-spotted stems. The leaves are pinnately dissected three to four times with rather small ultimate segments. The flowers are small and white and are arranged in umbrella-shaped clusters. Fruits are broadly ovate and are flattened laterally. Flowering occurs between June and August. Poison hemlock is a member of the carrot family.

Occurrence: The plant was introduced from Eurasia and is now a widespread weed along waterways and disturbed sites throughout North America.

Toxicity: The toxic properties of poison hemlock have been known since antiquity. The poison was used by Romans and Greeks for suicides or to dispatch enemies or criminals. The plant contains toxic alkaloids of which one, coniine, has been identified. Unlike water hemlock, the toxic compounds occur primarily in the stems, leaves, and fruits rather than in the roots. The seeds are particularly high in toxic alkaloids. The plant is most poisonous as the seeds mature.

Symptoms: The toxic compounds produce vomiting, weakness, trembling, depression of the central nervous system, dilation of pupils, coma, and death.

Family: Apiaceae

Scientific name: "Conium maculatum" L.

Common name: Poison hemlock, hemlock

Description: Poison hemlock (figure 9) is a tall biennial herb with a stout taproot and purple-spotted stems. The leaves are pinnately dissected three to four times with rather small ultimate segments. The flowers are small and white and are arranged in umbrella-shaped clusters. Fruits are broadly ovate and are flattened laterally. Flowering occurs between June and August. Poison hemlock is a member of the carrot family.

Occurrence: The plant was introduced from Eurasia and is now a common weed along waterways and ditch banks throughout North America.

Toxicity: The toxic principles of poison hemlock are several alkaloids. [illegible]

Compounds: [illegible] doses, and death.

Family: Apocynaceae

Scientific name: "Nerium oleander" L.

Common name: Oleander

Description: This tall shrub (figure 10) is in the dogbane family, but it differs from many species in that family because it does not have any milky juice in the stems and leaves. The leaves appear opposite or in whorls of three. They are lance shaped, entire and somewhat leathery. The showy clusters of flowers are located at the ends of branches and vary in color from white to pink and red.

Occurrence: Oleanders were introduced from the Mediterranean and Asiatic regions and are now very popular as potted ornamentals and roadside plantings.

Toxicity: Oleander contains two major cardiac glycosides, oleandroside and nerioside. All parts of the oleander, both green and dry, are extremely toxic. One leaf is considered sufficient to kill an adult. Numerous poisonings have resulted from using the branches to skewer frankfurters or other foods for roasting over open fires. Children have been poisoned by sucking nectar from the blossoms or by chewing the leaves. Honey made from oleander is poisonous.

Symptoms: The toxic compounds in oleander produce nausea, severe stomach pains, diarrhea, vomiting, weakness, irregular heartbeat, dilation of pupils, dizziness, drowsiness, respiratory paralysis, coma, and death.

Family: Asteraceae

Scientific name: "Eupatorium rugosum" Houtt.

Common name: White snakeroot, snakeroot

Description: The large genus "Eupatorium" of the sunflower family includes a diverse group of species, with flowers ranging from white ("E". "rugosum") (figure 11) to blue, violet, and a purplish color. The leaves are mostly opposite ("E". "rugosum"), but sometimes are alternate or whorled. The flower heads are large to small, but mostly they are in more or less flat-topped inflorescences. The individual flowers are tubular and perfect. The involucral bracts generally are in several lengths. The fruits are achenes and mostly have five angles. Each achene is fitted with a circle of fine bristles.

Occurrence: There are perhaps 500 species of herbs and shrubs in this genus, and most of them are in the American tropics. "Eupatorium rugosum" is found in the East and the Midwest.

Toxicity: Poisoning in humans by tremetol, the poisonous compund in white snakeroot, historically has been associated with drinking milk from cows that have eaten the plant. This so-called milk sickness caused considerable loss of life among the early settlers. Cases of milk sickness are now rare except when one family uses raw milk from one or two family cows that have grazed white snakeroot.

Symptoms: Tremetol produces weakness, followed by loss of appetite, stomach pains, vomiting, constipation, thirst, trembling, delirium, coma, and death.

Family: Berberidaceae

Scientific name: "Caulophyllum thalictroides" (L.) Michx.

Common name: Blue cohosh

Description: This perennial glabrous herb arises from rough rootstocks and may reach a height of more than 2 feet. The yellowish-green flowers appear in late April and May and have six sepals, petals, and stamens (figure 12). Early in the spring a simple naked stem appears that terminates in a raceme or panicle. A little below the inflorescence the stem bears a triternately compound sessile leaf. An unusual feature of the plant is that the fast-growing seeds rupture the ovary and the integument of the seed turns blue (figure 13).

Occurrence: This member of the barberry family is fairly common in the rich woodlands of the Eastern United States up to about 3,000 feet.

Toxicity: The alkaloid methylcytisine is found in the leaves and seeds. Glycosides also are present. Children have been poisoned after eating the attractive bright blue seeds.

Symptoms: Poisoning causes severe stomach pains.

Family: Cannabinaceae

Scientific name: "Cannabis sativa" L.

Common name: Marijuana, hemp, pot

Description: This strongly aromatic annual of the hemp family has stems that vary from 3 to 6 feet tall (figure 14). The leaves are alternate or opposite and are palmately compound. The three to nine leaflets are linear-lanceolate and coarsely toothed. The flowers are small, greenish, and unisexual. Both staminate and pistillate flowers are clustered in leaf axils, but they are located on separate plants. The flowers and vegetative parts exude a sticky resin from which marijuana is obtained.

Occurrence: This species is native to central Asia and is a widely naturalized weed in temperate North America. It is cultivated in warmer regions throughout the world for the oil obtained from the seeds and for the fiber that separates from the stems.

Toxicity: The narcotic effect of marijuana has been known for more than 2,000 years. Marijuana was cultivated in the United States until 1955 for its fibers (hemp), but because of its misuse as a narcotic, cultivation or use is now legally prohibited in the United States and Canada. Marijuana contains toxic resins, primarily tetrahydrocannabinol (THC), that are found throughout the plant. Resin content varies with the season, stage of growth, and climate, but it is found in greatest concentration in the mature inflorescence of the female plant. Poisoning may result from chewing plant parts, drinking an extract, or smoking reefers.

Family: Cannabinaceae

Scientific name: "Cannabis sativa" L.

Common names: Marijuana, hemp, pot

Description: This strongly aromatic annual of the hemp family can grow that vary from 1 to 6 feet tall (figure 16). The leaves are alternate or opposite and are palmately compound. The three to nine leaflets are linear-lanceolate and coarsely toothed. The flowers are mostly greenish and dioecious. Both staminate and pistillate flowers are clustered in leaf axils, but they are borne on separate plants. The [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] cultivation or illicitly.

Toxicity: [illegible]

[illegible]

Symptoms: Individuals who indulge in marijuana may experience euphoria and exhilaration, followed by delusions, hallucinations, incoordination, blurred vision, impairment of concentration, anxiety, stupor, and coma.

Family: Caprifoliaceae

Scientific name: "Sambucus" spp.

Common name: Elderberry

Description: There are about six species of elderberry in the temperate zones of the Western United States and at least three species in the East. All are characterized by pithy stems; opposite, compound leaves; and red or blue to purple berries (figures 15 and 16). The small, numerous flowers are white to cream in color and are arranged in flat-topped compound clusters. By mid-August the solitary pistils form the fruits. The fruits are relished by birds and other wildlife. All elderberries are members of the honeysuckle family. The species are difficult to delimit and botanists differ on identification.

Occurrence: These shrubs vary in height from 6 to 18 feet and grow mostly in forests and canyons and along bottomlands and clearings. They seldom grow in prairie areas.

Toxicity: Elderberries contain a poisonous alkaloid and cyanogenic glycoside in the roots, stems, leaves, and unripe berries. Children are sometimes sickened by using the stems as blow-guns. The ripe berries are edible and are used for wine, jelly, and pies.

Symptoms: The toxic compounds in elderberry cause nausea, vomiting, and diarrhea.

Family: Euphorbiaceae

Scientific name: "Ricinus communis" L.

Common name: Castorbean

Description: This species (figure 17) is generally described as an arborescent shrub, but in cold climates it is grown as an annual. The leaves are alternate and palmate with 5 to 11 lobes; each lobe has a serrate margin. The flowers are in racemes or panicle-like clusters. The unisexual flowers are arranged with the female flowers positioned above the male flowers. The fruit capsules are smooth to spiny and the mottled glossy seeds are fitted with water-absorbing caruncle at the base. The plant is native to Asia and Africa and is a member of the spurge family.

Occurrence: This shrub grows up to 15 feet high and is cultivated as an ornamental throughout the United States.

Toxicity: Castorbeans are not considered weeds since they are planted commercially for oil production and are grown as ornamentals. The attractive seeds contain ricin, one of the most deadly compounds known. Ingesting two to four seeds may cause serious poisoning in an adult; eating eight seeds usually is fatal.

Symptom: The phytotoxin ricin causes a burning sensation in the mouth, followed by stomach pains, diarrhea, dullness, incoordination, vomiting, excessive thirst, convulsions, prostration, and death.

Family: Euphorbiaceae

Scientific name: "Ricinus communis" L.

Common name: Castorbean

Description: This species (Figure 17) is generally described as an arborescent shrub, but in cold climates it is grown as an annual. The leaves are alternate and palmate with 5 to 11 lobes; each lobe has a serrate margin. The flowers are in racemes or panicle-like clusters. The unisexual flowers are arranged with the female flowers positioned above the male flowers. The fruit capsules are smooth or spiny and the mottled glossy seeds are fitted with [illegible] at the base. The plant is native to Africa and is a member of the spurge family.

Distribution: This shrub grows up to 15 feet high and is cultivated as an ornamental throughout the United States.

[illegible]

Family: Fabaceae

Scientific name: "Abrus precatorius" L.

Common name: Precatory bean, rosary pea, crab's-eye, jequirity bean

Description: This member of the legume family is a twining, perennial vine that may climb on other plants to a height of 10 to 20 feet (figure 18). The leaves are alternate and pinnately compound, each leaflet being about 1/2 inch long. There are numerous inflorescences in the leaf axils along the stem. The many flowers are small and red to purple. The legume type fruit is 1 1/2 inches long and is conspicuous because of its finely appressed hairs. The bright glossy scarlet seeds are tipped with jet black.

Occurrence: This native vine of tropical countries was introduced into Florida, where it is now a weed of fence rows and citrus groves.

Toxicity: The toxic compound, abrin, is so potent that one thoroughly chewed seed is enough to kill an adult human. The brilliant seeds have been made into rosaries, bracelets, necklaces, and toys. Such uses and the sale of these seeds are now prohibited in the United States because of the high toxicity of the seeds.

Symptoms: The abrin in precatory beans causes nausea, vomiting, diarrhea, depression, irregular pulse, incoordination, collapse, paralysis, and death.

Family: Fabaceae

Scientific name: "Abrus precatorius" L.

Common name: Precatory bean, rosary pea, crab's-eye, jequirity bean

Description: This member of the legume family is a twining, perennial vine that may climb on other plants to a height of 10 to 20 [illegible] (figure 10). The leaves are alternate and pinnately compound, each leaflet being about 1/2 inch long. There are [illegible] inflorescences in the leaf axils along the stem. The [illegible] flowers are small and red to purple. The [illegible] is 1 1/2 inches long and is [illegible] enclosed seeds. The bright glossy [illegible] with jet black.

Distribution: This native vine of tropical [illegible] in the West Indies and [illegible] of [illegible] [illegible].

[illegible]

Family: Liliaceae

Scientific name: "Zigadenus" spp.

Common name: Deathcamas, poisoncamas

Description: The stems of these perennial plants grow from 1 to 2 feet tall when in full flower. Several inches below ground the stem is attached to an onion-like bulb that lacks the characteristic onion-like odor. The basal leaves are grass-like and have parallel veins. The bowl-shaped flowers vary from cream to greenish-white and occur in racemes or branched flower clusters. The fruit is a three-parted capsule.

Occurrence: Deathcamas are found throughout the United States, but most species occur west of the Mississippi River. The foothill deathcamas ["Zigadenus paniculatus" (Nutt.) S. Wats.] (figure 19) is a poisonous species in the Western United States.

Toxicity: Deathcamas plants are aptly named because of the high toxicity of their steroid alkaloids. The young growth and bulbs are the most toxic parts (figure 20). Humans are most likely to be poisoned by mistaking the bulbs for those of edible species of the genus "Camassia". Children have been poisoned by eating the flowers.

Symptoms: "Zigadenus" alkaloids produce weak, rapid heartbeat, weakness, lowered temperature, stomach pains, vomiting, diarrhea, prostration, and death.

Family: Loranthaceae

Scientific name: "Phoradendron serotinum" (Raf.) M.C. Johnst.

Common name: Mistletoe

Description: Mistletoes (figure 21) are parasitic plants that grow on a variety of trees and shrubs. Their stems usually are swollen at the nodes and brittle, and they have many branches. Leaves are opposite and vary from triangular scales to leathery, evergreen leaves. Flowers are inconspicuous, unisexual, and lack petals. Fruits are one-seeded white berries with sticky pulp that adheres to the beaks of birds that feed on the fruits.

Occurrence: Several species grow widely throughout North America.

Toxicity: Mistletoe is most familiar as a Christmas decoration. The toxic berries contain the pressor amines, tyramine and betaphenylethylamine. The berries or tea brewed from them are toxic. The berries should be kept out of the reach of children.

Symptoms: Mistletoe produces gastro-intestinal irritation, diarrhea, and cardiovascular collapse.

Family: Loranthaceae

Scientific name: "Phoradendron serotinum" (Raf.) M.C. Johnst.

Common name: Mistletoe

Description: Mistletoes (figure 21) are parasitic plants that grow on a variety of trees and shrubs. Their stems usually are swollen at the nodes and brittle, and they have many branches. Leaves are opposite and vary from triangular scales to [illegible], evergreen leaves. Flowers are inconspicuous, unisexual, and lack petals. Fruits are one-seeded white berries with sticky pulp that adheres to the beaks of birds that feed on the fruits.

Occurrence: Several species grow widely throughout North America.

Toxicity: This plant is most familiar as a Christmas decoration. The [illegible] berries contain the pressor amines, tyramine and betaphenylethylamine. The berries [illegible] [illegible]. The berries should be kept out of the reach of children.

[illegible]

[illegible]

Family: Phytolaccaceae

Scientific name: "Phytolacca americana" L.

Common name: Pokeberry, pokeweed, pigeonberry, inkweed, garget, scobe

Description: Pokeberry (figure 22) is a smooth, herbaceous perennial of the pokeberry family; it develops from a thick taproot. The stem may reach up to 6 feet tall. The broadly lanceolate leaves are alternate and entire. Bisexual flowers are borne on stout pedicels on a drooping raceme. The perianth consists of five greenish-white or pink sepals. The fruit is a dark purple, subglobose berry that contains a red juice. Each berry has 10 shiny black seeds. The common name pigeonberry suggests their use by birds.

Occurrence: This species is native to the Eastern United States and Canada. It has been introduced in barnyards and near waterways and seems to be spreading in the southwestern States.

Toxicity: All parts of the plant are toxic. The fleshy taproot is particularly poisonous. When boiled in two changes of water, the young shoots often are eaten as greens. The ripe berries sometimes are cooked in pies. The use of any part of the plant as food, however, should be discouraged because improper cooking may not completely detoxify shoots and berries. Several berries may poison a child and 10 berries or more may sicken an adult. Deaths of children have been reported from massive consumption of ripe berries.

Symptoms: In humans, symptoms of poisoning include a burning sensation in the mouth followed by stomach cramps, vomiting, diarrhea, weak respiration, prostration, dimness of vision, and convulsions.

Family: Polypodiaceae

Scientific name: "Pteridium aquilinum" (L.) Kuhn

Common name: Brackenfern

Description: This cosmopolitan perennial fern (figure 23) starts the growth of its fronds in June, and they remain green until early October. The fronds reach a height of 2 to 4 feet and develop from deep underground stems. The blades of the fronds are broadly triangular in outline and two to three times pinnate. The mature fronds bear thousands of spore-bearing capsules (sporangia) on the lower leaf margins. The leaf margin recurves downward to protect the delicate sporangia.

Occurrence: This species is found frequently from Virginia and Tennessee west to the Pacific in the middle and upper mountain zone, and is found generally in subacid soil in moist forest clearings. It also occurs in burned-over sites in forests where there is some shade.

Toxicity: Brackenfern contains a carcinogen that may cause cancer. Although humans do not normally eat brackenfern, the carcinogen may occur in the milk of cows that have fed on the plant. Bladder and intestinal cancer has been produced experimentally in cows fed brackenfern and in animals that subsequently drank milk from these cows.

Symptoms: No symptoms of direct poisoning in humans are recorded. The high incidence of bladder and intestinal cancer among humans in Wales, where brackenfern is common in grazing lands, may be related to contaminated milk.

Family: Ranunculaceae

Scientific name: "Actaea rubra" (Ait.) Willd.

Common name: Western baneberry, dolls-eyes, snakeberry

Description: Western baneberry (figure 24) is a tall perennial herb in the buttercup family. In the shade of the open forest, this plant is 2 to 3 feet high. The compound leaves are divided into oval, toothed leaflets. The elongated flower cluster is 3 to 7 inches in length and consists of many small flowers, each with 4 to 10 small white petals. There are two color phases to the fruits--red and white, prompting some botanists to classify these as separate varieties.

Occurrence: This species is native to the forests and mountains of the Western United States but occurs also in the Midwest and in the New England States.

Toxicity: All parts of the baneberry are toxic, particularly the roots and berries. The toxic compound is attributed to an essential oil. The colorful red (or white) berries are attractive to children. Deaths have been reported among children in Europe who ate the berries of the European species of baneberry.

Symptoms: Baneberry poisoning is characterized by dizziness, severe gastroenteritis, vomiting, headache, and circulatory failure.

Family: Ranunculaceae

Scientific name: "Actaea rubra" (Ait.) Willd.

Common name: Western baneberry, dolls-eyes, snakeberry

Description: Western baneberry (Figure 24) is a tall perennial herb in the buttercup family, in the shade of the open forest. This plant is 2 to 3 feet high. The compound leaves are divided into ovate, toothed leaflets. The elongated flower cluster is 1 to [illegible] inches in length and consists of many small flowers, each with 4 to 10 small white petals. There are two color phases of the [illegible] and white, prompting some botanists to classify these as separate varieties.

Habitat: This species is resident of the forests and mountains of the [illegible] United States but not [illegible] also in the [illegible]

Toxicity: All parts of the [illegible]

[illegible]

Family: Rhamnaceae

Scientific name: "Rhamnus cathartica" L.

Common name: European buckthorn

Description: This shrub or small tree may reach a height of 26 feet (figure 25). The simple opposite leaves are broadest at or above the middle and have a sharp point at the tip. Bisexual and sometimes unisexual flowers occur in few-flowered clusters in the junction of the leaves. Individual flowers lack petals, but have a four- to five-lobed calyx. The black berry-like fruits (drupes) are solitary or are grouped in two to five berries per cluster. Each fruit is juicy and contains three or four seeds. This species is very hardy and resistant to insect attack.

Occurrence: This European native has escaped cultivation and has become naturalized throughout Eastern North America along fence rows and in vacant lots and open woods.

Toxicity: Buckthorn contains a glycoside from which a strong laxative, anthraquinone, is derived by hydrolysis. Poisoning from eating the leaves and black juicy fruits has been reported from Europe. Cascara buckthorn ("Rhamus purshiana" DC.), a native of the Pacific Northwest, also is poisonous.

Symptoms: Poisoning is characterized by moderate to severe stomach cramps and diarrhea.

Family: Rosaceae

Scientific name: "Prunus virginiana" L.

Common name: Chokecherry

Description: This large shrub may reach 20 feet in height and is known to many midwesterners and westerners as a source of small, tart cherries. The five-petaled, white flowers are about one-third of an inch across and are borne in attractive cylindrical clusters 3 to 4 inches long (figure 26). Though tempting to the eye, the fruit (figure 27) is disappointing because it is harshly astringent and is nearly all stone.

Occurrence: Plants grow along streams and in forests in the western mountains and in the Midwestern to the Atlantic coastal States. Chokecherry is a member of the rose family. Other species grow elsewhere in the United States.

Toxicity: The leaves, bark, and seeds of chokecherry contain the glycoside amygdalin, which hydrolyzes to highly toxic hydrocyanic (prussic) acid. The ripe fruit is edible, provided the seeds are first removed, and it is used for making jams and jellies. Children have been poisoned by chewing the leaves or seeds. Cyanide poisoning can occur very quickly and with deadly results. The leaves, bark, and seeds of other stone fruits, notably cherries, peaches, plums, and apricots may be high in HCN and also should be avoided.

Symptoms: Cyanide poisoning produces nausea, vomiting, difficulty in breathing, paralysis of the larnyx, spasms, coma, and death.

Family: Solanaceae

Scientific name: "Datura stramonium" L.

Common name: Jimsonweed, thornapple, datura

Description: This coarse, heavy-smelling annual herb of the nightshade family has stout stems up to 4 feet tall. The leaves are alternate and up to 3 inches long, and the white corolla is delicately folded in bud. The fruits are erect and hairless and have few spines. The related perennial species "Datura inoxia" Mill. also has a white corolla that reaches a length of 6 inches. The globose fruit hangs down. Hindu datura ("Datura metel" L.) and sacred datura ("D". "meteloides" DC.) (figure 28) also are poisonous.

Occurrence: Jimsonweed is found in dry soil, waste places, and barnyards and is widely distributed throughout the temperate and warm-temperate regions of the world.

Toxicity: Jimsonweed contains the alkaloids hyoscyamine, atropine, and hyoscine (scopolamine). All parts of the plant, particularly the leaves, are toxic. Children have been poisoned by sucking nectar from the large trumpet-like flowers, and from eating the leaves or seeds. The seeds are particularly dangerous and are often purposefully used for their narcotic effect. Deaths have occurred from direct poisoning from delirium and hallucinations accompanying their use.

Symptoms: Datura poisoning produces elevated temperature, nausea, thirst, dilation of pupils, weak and rapid pulse, convulsions, delirium, hallucinations, and death.

Family: Solanaceae

Scientific name: "Solanum dulcamara" L.

Common name: Bitter nightshade

Description: This woody perennial can have a straggling or climbing stem up to 6 feet in length (figure 29). Leaves are alternate, petiolated, some simple and entire, and others with a pair of small basal lobes or leaflets. The plant blooms from July through August. Flowers are arranged in groups of three or more. The corolla is purple and star shaped. The ovoid berries are juicy and glossy red; the seeds are yellow-orange to reddish.

Occurrence: This cosmopolitan native of Europe is widely distributed in the United States and is found on moist, disturbed sites.

Toxicity: Bitter nightshade contains an extremely toxic glycoalkaloid, solanine. Other species of "Solanum" contain solanine or closely related compounds, all of which produce similar physiologic action. Solanine is found in the leaves and is highly concentrated in the unripe berries. Children have been poisoned after eating the attractive berries. More than a dozen other species of "Solanum" also are poisonous.

Symptom: Symptoms of nightshade poisoning include salivation, headache, stomach pain, drowsiness, trembling, lowered temperature, dilated pupils, vomiting, diarrhea, progressive weakness, prostration, and death.

Other plants that are poisonous when eaten are listed in table 2.

Family: Solanaceae

Scientific name: "Solanum dulcamara" L.

Common name: Bitter nightshade

Description: This woody perennial can have a straggling or climbing stem up to 8 feet in length (figure 29). Leaves are alternate, petiolated, some simple and entire, and others with a pair of small basal lobes or leaflets. The plant blooms from July through August. Flowers are arranged in groups of three or more. The corolla is purple and star shaped. The ovoid berries are juicy and glossy red; the seeds are yellowish or reddish.

Distribution: This cosmopolitan native of Europe is widely distributed in the United States and is found in moist, disturbed sites.

Poisoning: Bitter nightshade contains an alkaloid, toxic, especially [illegible] "Solanum" [illegible]

[illegible]

[illegible] are poisonous when eaten [illegible]

Table 2. Other Plants That Are Poisonous When Eaten

Common name	Scientific name
Buckeye, horsechestnut	"Aesculus" spp.
Chinaberry	"Melia azedarach" L.
Larkspur	"Delphinium" spp.
Monkshood, wolfbane	"Aconitum" spp.
Moonseed	"Menispermum canadense" L.
Mountain laurel	"Kalmia latifolia" L.
Yellow jessamine	"Gelsemium sempervirens" (L.) Ait. f.
Yew	"Taxus" spp.

WEEDS THAT CAUSE MECHANICAL INJURY

Many weeds produce spines or other sharp appendages on leaves, stems, or fruits that scratch or puncture the skin. The wounds are painful, may bleed, and if not properly treated can become infected. Many a barefooted child has stepped on a sandbur or puncturevine fruit. The spines on puncturevine are so long and stout that they can puncture bicycle tires or penetrate the foot through a thin rubber-soled shoe. Many other plants, including cacti, blackberry brambles, and certain trees, produce spines and thorns that can be harmful to the unwary.

Injury can be prevented by avoiding the plants or by wearing protective clothing. Prompt first aid for injuries will greatly reduce the chance of infection.

Family: Asteraceae

Scientific name: "Xanthium strumarium" L.

Common name: Cocklebur

Description: Cocklebur (figure 30) is a coarse bushy annual in the sunflower family. The stems may reach 2 to 3 feet high and are usually red-spotted. Leaves are alternate, simple, and toothed. The flowers are unisexual and arise from the leaf axils along the main stem. Inconspicuous male flowers are grouped in round clusters at the top; the conspicuous female flowers are at the base. Involucral bracts of the female flower ultimately form an ellipsoid, hardened prickly bur. The prickles are hooked at the tip. The male flowers drop off quickly, but the burs remain, protecting the two blackish achenes. The burs are spread to other areas by sticking to animals and clothing.

Occurrence: This cosmopolitan weed grows in flooded soils of roadsides, in waste places, and in cultivated fields.

Family: Cactaceae

Scientific name: "Opuntia" spp.

Common name: Prickly pear

Description: These somewhat woody plants have short-jointed stems that may be cylindrical or flattened (figure 31). The leaves are small and fleshy, and are soon shed. The most important feature of prickly pears is the presence of glochids. These are small bristles that detach themselves readily from the areoles and can pierce the skin. The flowers are positioned on joints of the previous year, and the floral tube is bell-shaped. The perianth segments and stamens are numerous. The fruit is a large, somewhat pear-shaped berry. The name prickly pear derives from the use of the fruits as food. To remove the spines, the fruits are roasted and the spines are peeled off with the skin. Bristles stuck in the fingers should be smeared with rubbery glue (rubber cement). When it has hardened it should be pulled off and the spines should come away with it. If no glue is available, soap and water may help.

Occurrence: Opuntias, like all members of the cactus family, originated in the New World. They are found on the deserts and grasslands of the Western United States.

Family: Cactaceae

Scientific name: "Opuntia" spp.

Common name: Prickly pear

Description: These somewhat woody plants have short-jointed stems that may be cylindrical or flattened (figure 91). The leaves are small and fleshy, and are soon shed. The most important feature of prickly pears is the presence of glochids. These are small bristles that detach themselves readily from the areoles and can pierce the skin. The flowers are positioned on joints of the previous year, and the floral tube is bell-shaped. The [illegible] and stamens are numerous. The fruit is a large, succulent pear-shaped berry. The name prickly pear is derived from the use [illegible] the [illegible]

Family: Poaceae

Scientific name: "Cenchrus longispinus" (Hack.) Fern.

Common name: Longspine sandbur

Description: Sandbur is an erect or prostrate annual that reproduces by seeds or by stems rooting at the lower nodes. The stems may reach 3 feet in length. The inflorescence is a highly modified panicle appearing as a spike of burs (figure 32). The spiny burs are about one-half of an inch long and the flattened, spreading spines are up to one-fourth of an inch long. Each bur usually contains two seeds, but a single plant may produce 1,000 seeds. The retrosely-barbed spines are hard to extract once they have punctured the skin. The end may break off and cause infection.

Occurrence: This obnoxious weed of the grass family is found in disturbed areas, often in sandy soil. Although its distribution is most common in the Central and Eastern United States, it extends throughout most of North America.

Family: Zygophyllaceae

Scientific name: "Tribulus terrestris" L.

Common name: Puncturevine

Description: Puncturevine (figure 33) of the caltrop family is a prostrate, hairy annual with a shallow taproot. The trailing stems may radiate out from the root for a distance of 1 to 5 feet, or the stem may grow erect when competing for light. Leaves are opposite and pinnately compound with four to eight pairs of leaflets. The bright yellow flowers have five petals and are positioned in the axils of the leaves. The fruits consist of a hard and spiny star-shaped capsule that eventually divides into five sharp two-horned segments. The fruit spines easily pierce bicycle tires, hence the common name puncturevine.

Occurrence: This species is a native of the Mediterranean region and is widely distributed throughout North America, principally in waste places, roadsides, and disturbed sites.

Other species that cause mechanical injury are listed in table 3.

Table 3. Other Plants That Cause Mechanical Injury

Common name	Scientific name
Devils beggar's tick	"Bidens frondosa" L.
Burdock	"Arctium minus" (Hill) Bernh.
Canada thistle	"Cirsium arvense" (L.) Scop.
Prickly ash	"Zanthoxylum americanum" Mill.
Cordgrass	"Spartina" spp.

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FIGURES

1. Ragweed ("Ambrosia artemisiifolia" L.)
2. Poison ivy ("Rhus radicans" L.)
3. Poison oak ("Rhus diversiloba" Torr. & Gray)
4. Poison sumac ("Rhus vernix" L.)
5. Stinging nettle ("Urtica dioica" L.)
6. Destroying angel ["Amanita muscaria" (Fr.) S. F. Gray]
7. Western waterhemlock ["Cicuta douglasii" (DC.) Coult. & Rose] (flower)
8. Western waterhemlock ["Cicuta douglasii" (DC.) Coult. & Rose] (base of stalk)
9. Poison hemlock ("Conium maculatum" L.)
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13. Blue cohosh ["Caulophyllum thalictroides" (L.) Michx.] (fruit)
14. Marijuana ("Cannabis sativa" L.)
15. Red elderberry ("Sambucus racemosa" L.)
16. Blue elderberry ("Sambucus caerulea" Raf.)
17. Castorbean ("Ricinus communis" L.)
18. Precatory bean ("Abrus precatorius" L.)
19. Deathcamas ["Zigadenus paniculatus" (Nutt.) S. Wats.] (flower)
20. Deathcamas ["Zigadenus paniculatus" (Nutt.) S. Wats.] (whole plant)
21. Mistletoe ["Phoradendron serotinum" (Raf.) M. C. Johnst.]
22. Pokeberry ("Phytolacca americana" L.)
23. Brackenfern ["Pteridium aquilinum" (L.) Kuhn]
24. Western baneberry ["Actaea rubra" (Ait.) Willd.]
25. European buckthorn ("Rhamnus cathartica" L.)

26. Chokecherry ("Prunus virginiana" L.) (flower)
27. Chokecherry ("Prunus virginiana" L.) (fruit)
28. Sacred datura ("Datura meteloides" DC.)
29. Bitter nightshade ("Solanum dulcamara" L.)
30. Cocklebur ("Xanthium strumarium" L.)
31. Pricklypear ("Opuntia phaeacantha" Engelm.)
32. Longspine sandbur ["Cenchrus longispinus" (Hack.) Fern.]
33. Puncturevine ("Tribulus terrestris" L.)

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GLOSSARY

Achene: A small, dry, hard, indehiscent one-seeded fruit.

Antibody: A protein produced by the body that reacts with or neutralizes an antigen.

Antigen: A substance, usually a protein, carbohydrate, or a complex of fat and carbohydrate, that causes the production of antibodies when introduced into the body.

Arborescent: Treelike in size and form.

Areoles: A small, clearly bounded area on a surface, usually referring to the spine-bearing area on a cactus.

Bipinnatifid: Twice pinnate.

Calyx: A collective term applied to all of the sepals of a flower.

Caruncle: A bulge or appendage near the hilum of certain seeds.

Corolla: A collective term applied to all of the petals of a flower.

Dioecious: Having staminate and pistillate flowers on different plants.

Ecotype: The individuals of a species that are adapted to a particular environment.

Glabrous: Smooth, without hairs.

Globose: More or less spherical.

Histamine: A compound responsible for dilation and increased permeability of blood vessels. Plays a major role in allergenic reactions.

Hydrolysis: A decomposition in which a compound is split into other compounds by taking up the elements of water.

Involucral bract: A bract beneath an inflorescence. In the Asteraceae a whorl of bracts subtending a flower cluster.

Lanceolate: Shaped like the head of a lance, tapering to a point at the apex and sometimes at the base.

GLOSSARY (Continued)

Lobe: A projecting segment of an organ, too large to be called a tooth.

Monoecious: Having unisexual flowers, but the staminate and pistillate flowers on the same plant.

Panicle: A branched indeterminate infloresence.

Perianth: A collective term for all of the sepals and petals of a flower.

Petiole: A leaf stalk.

Pinnate: With two rows of appendages or parts along an axis, like barbs on a feather.

Pistillate flower: A flower with one or more pistils but no stamens.

Sepal: A member of the outermost set of floral appendages, typically green.

Sessile: Attached directly by the base, without a stalk.

Stamen: The male organ of a flower consisting of an anther and filament.

Staminate flower: A flower with one or more stamens but no pistil.

Subglobose: Almost or not quite spherical.

Ternate: In threes.

Triternately: Three times ternate.

Unisexual flower: A flower with stamens or pistils, but not both.

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"Abrus precatorius",

"Actaea rubra",

"Amanita muscaria",

    "phalloides",

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Crab's-eye

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    "metel",

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Deathcamas,

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- Marijuana,
- Mistletoe,
- "Nerium",
  - "oleander",
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  - slender,
  - stinging,
  - wood,
- Nightshade,
  - bitter,
- Oleander,
- "Opuntia",
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- "Phoradendron",
  - "serotinum",
- "Phytolacca",
  - "americana",
- Pigeonberry,
- Poisoncamas,
- Poison hemlock,
- Poison ivy,
- Poison oak,
- Poison sumac,
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- Pot,
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"Tribulus",
  "terrestris",
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  "dioica",
  "gracilis",
Waterhemlock
  western
White snakeroot,
"Xanthium",
  "strumarium",
"Zigadenus",
  "paniculatus",

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